



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,654	12/22/2003	Tadaaki Oikawa	FUJI:284	7596

7590 01/26/2006  
ROSSI & ASSOCIATES  
P.O. Box 826  
Ashburn, VA 20146-0826

EXAMINER

RICKMAN, HOLLY C

ART UNIT PAPER NUMBER

1773

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/743,654		OIKAWA ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Holly Rickman		1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The rejection of claim 11 under 35 U.S.C. 112, second paragraph, is withdrawn in view of Applicant's amendments.

### ***Claim Objections***

2. Claims 15-16 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It is not clear to the examiner how the recitations of deposition or sputtering from the alternating targets further limits claims 11 and 12 which also require alternate deposition using alternating targets.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1773

4. The rejection of claims 1-10 under 35 U.S.C. 103(a) as obvious over Suzuki et al. (US 6068739) in view of Haratani et al. (US 6420058) is withdrawn in view of Applicant's amendments.

5. The rejection of claims 1-5 and 8-14 under 35 U.S.C. 103(a) as obvious over Araki et al. (US 6824817) is withdrawn in view of Applicant's amendments.

6. Claims 11-17 are rejected under 35 U.S.C. 103(a) as obvious over Araki et al. (US 6824817) in view of Haratani et al. (US 6420058) and further in view of Ristau (US 6541131) and Nemoto et al. (US 6815083).

Araki et al. disclose a magnetic recording medium having a buffer layer with a thickness of 10-50 nm formed on a nonmagnetic substrate, a FePt L1o oriented magnetic recording layer having alternating monatomic layers of Fe and Pt. The structure is formed via a sputtering method at a substrate temperature of 120-240 C. The examiner maintains that heating of the substrate to a maximum of 240 C during deposition of the L1o layer necessarily results in some amount of residual heating subsequent to deposition of the magnetic layer as required by claim 13.

Araki et al. teaches that the thickness of the Fe layers is 0.14 nm and the thickness of the Pt layers is 0.2 nm (col. 5, lines 38-40). The reference also teaches that the total number of layer pairs of Pt and Fe may be as low as 10. With this number of layers, the total thickness of the FePt magnetic structure is 3.4 nm. The perpendicular magnetic anisotropy energy of the FePt

Art Unit: 1773

layer taught by Araki et al. is from about  $1.4$  to  $4.1 \times 10^7$  erg/cc (see paragraph 22 of specification for conversion).

The reference is silent with respect to the presence and/or deposition of a protective layer and a lubricant layer thereon.

Haratani et al. teaches that it is known in the art to use a protective layer and lubricant on a magnetic recording layer to protect the medium from contact with a magnetic head (col. 4, lines 49-55).

It would have been obvious to one of ordinary skill in the art at the time of invention to add a protective layer and lubricant to the structure taught by Araki et al. in order to further protect the surface of the medium.

The combination of Araki et al. in view of Haratani et al. fails to disclose the method limitations directed to deposition or sputtering from alternating targets.

Ristau teach that it is known in the art to sputter a L10 layer from a single target or co-sputter from separate elemental targets (col. 4, lines 59-65).

It would have been an obvious matter of design choice to use separate Fe and Pt elemental targets in the method taught by Araki et al. in view of the art recognized equivalence of sputtering using a single target and co-sputtering using separate targets.

Nemoto et al. teach that it is known in the art to use a rotary cathode device in a sputtering process in order to mount multiple target cathodes for sputtering of an alloy magnetic film. The reference teaches that the use of a rotary cathode allows for simultaneous or alternate discharge sputtering methods (see col. 8, lines 50-67).

Art Unit: 1773

It would have been an obvious to one of ordinary skill in the art at the time of invention to use the rotary cathode technique described by Nemoto et al. in conjunction with the sputtering process taught by Araki et al. in order to obtain the flexibility of alternate discharge or simultaneous sputtering.

***Response to Arguments***

7. Applicant's arguments filed 11/15/05 have been fully considered but they are not persuasive.

Applicant argues that the claims as newly amended require using a target of Fe or Co alternately with a target of Pt. Applicant maintains that Ristau teaches using plural targets that are used at the same time instead of alternately.

The argument is moot in view of the new grounds of rejection which now includes Nemoto et al. which teaches the equivalence of simultaneous and alternate discharge sputtering. The claim limitation requiring "using alternately a target of Fe or Co and a target of Pt" has been interpreted to mean that the targets are deposited in an alternating manner (i.e., not simultaneously).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

Art Unit: 1773

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Holly Rickman", with a stylized flourish at the end.

Holly Rickman  
Primary Examiner  
Art Unit 1773